CLAIMS

Having thus described the preferred embodiments, the invention is now claimed to be:

1. An x-ray diagnostic imaging device **(10)** including:

an x-ray tube **(12)** for irradiating a patient with an x-ray beam;

a dose controller **(18)** for controlling milliamperes (mAs) of an x-ray tube current to control radiation dose; and,

a dose processor **(30)** for calculating a target maximum patient dose in accordance with physical parameters of the patient to be irradiated.

2. The apparatus according to claim 1, wherein, the dose selection processor **(30)** calculates the milliamperes (mAs) at which the x-ray tube **(12)** is to be operated in accordance with:

$$mAs = C(\text{patent weight} \div (\text{patient height})^2)^2,$$

where C is a constant.

3. The apparatus according to claim 1, further including a user input means **(20)** for inputting the patient's height **(24)** and weight **(26)**.

4. The apparatus according to claim 3, wherein the dose selection processor **(30)** is connected with the user input means **(20)** to receive the input weight and height therefrom, the dose selection processor including:

a means **(32)** for squaring the patient's height;

a means **(34)** for dividing the patient's weight squared by the patient's height squared to calculate a body mass index (BMI) of the patient;

a means **(38)** for squaring the body mass index (BMI); and,

a means **(42)** for multiplying the body mass index squared by a constant.

5. The apparatus according to claim 4, further including:

a target required noise memory **(28)** for storing a target required noise level; and

a means **(40)** for converting the target required dose into the constant which the multiplying means **(42)** multiplies by the body mass index squared.

6. The apparatus according to claim 1, wherein the dose selection processor **(30)** controls the tube controller **(18)** to control the tube to produce a tube current which is proportional to the examined patient's body mass index squared.

7. The apparatus according to claim 6, further including:

a reconstruction processor for reconstructing examination data from the x-ray scanner **(10)** into an image representation;

a thresholding means **(54)** for thresholding the image representation for calcium to generate a calcium enhanced image representation;

a means **(56, 62)** for storing the calcium enhanced image representation; and,

a means **(60)** for displaying the calcium enhanced image representation.

8. A method of diagnostic imaging including:

selecting a target required radiation dose of an x-ray tube **(12)** in accordance with physical parameters of a patient to be examined;

performing an x-ray diagnostic examination of the patient with an x-ray beam with the selected radiation doses.

9. The method according to claim 8, wherein selecting the radiation dose includes:

calculating a tube current in milliamperes (mAs) which is proportional to a body mass index squared of the patient to be examined.

10. The method according to claim 8, wherein the patient physical parameters include:

a weight and height of the examined patient.

11. The method according to claim 10, further including:

squaring the patient's height;

dividing the patient's weight by the patient's height squared to generate a body mass index (BMI);

squaring the body mass index; and,

multiplying the body mass index squared by a constant to calculate a tube current (mAs) for the x-ray tube **(12)**.

12. The method according to claim 11, wherein the constant is selected in accordance with a target required noise level.

13. The method according to claim 12, wherein the target required noise is 20 HU and the constant is 0.05.

14. The method according to claim 12, further including:

setting a tube current of the x-ray tube to the product of the body mass index squared and the constant.

15. The method according to claim 1, wherein the patient parameters include a patient body mass index.

16. The method according to claim 15, wherein the x-ray tube dose in milliamperes (mAs) of tube current is selected to be proportional to the body mass index squared.

17. The method according to claim 16, further including:

reconstructing an image representation from data generated while performing the diagnostic examination;

thresholding the reconstructed image representation with a calcium threshold to generate a calcium-enhanced diagnostic image representation.

18. The method according to claim 17, further including:

comparing the calcium-enhanced image representation with prior calcium-enhanced image representations of the same patient.

19. The method according to claim 18, wherein the target noise level of the present calcium-enhanced image representation is the same as the noise level of the prior calcium-enhanced image representations.